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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,152	08/21/2003	Jong-Kui Park	678-1106 (P10741)	8925
28249	7590	02/09/2005	EXAMINER	
DILWORTH & BARRESE, LLP 333 EARLE OVINGTON BLVD. UNIONDALE, NY 11553			CHEN, SHIH CHAO	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,152

Applicant(s)

PARK ET AL.

Examiner

Shih-Chao Chen

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-21 is/are allowed.
- 6) ☒ Claim(s) 1-3, 8-11 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 4-7, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 9-11, 14, and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Narayanaswamy et al. (U.S. Patent No. 5,905,467).

Regarding claim 1, Narayanaswamy et al. teaches in figures 2-6 an antenna apparatus for a mobile communication terminal, comprising: a main body [201] serving as a housing for the mobile communication terminal, the main body [201] having therein a main board; a keypad assembly [207] provided with a plurality of key tops formed on a front surface of the main body [201]; and an antenna section [205] disposed between the main board and the keypad assembly, in a lower end of the main body (See FIG. 2).

Regarding claim 2, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 1, wherein the antenna section [205] is comprised of an antenna sheet (i.e. a patch antenna disposed on the substrate) disposed underneath the keypad assembly [207].

Regarding claim 3, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 1, wherein the antenna section [205] is comprised of an antenna sheet (i.e. a patch antenna disposed on the substrate) on which a predetermined antenna pattern (See col. 3, lines 20-27) is formed.

Regarding claim 9, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 1, wherein the antenna section [205] is a wire antenna (See col. 3, lines 20-27).

Regarding claim 10, Narayanaswamy et al. teaches in figures 2-6 an antenna apparatus for a mobile communication terminal, comprising: a main body [201] serving as a housing for the mobile communication terminal, the main body [201] having therein a main board; a keypad assembly [207] provided with a plurality of key tops exposed on a front surface of the main body [201]; a first antenna [204] disposed in an upper end of the mobile communication terminal, for use in a signal receiving/transmitting function of a radio frequency signal through the mobile communication terminal; and a second antenna [205] disposed between the main board [201] and the keypad assembly [207], disposed in a lower end of the main body (See FIG. 2).

Regarding claim 11, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 10, wherein the second antenna [205] is comprised of an antenna sheet (i.e. a patch antenna disposed on the substrate) underlying the keypad assembly [207], positioned between the main board and the keypad assembly, with a predetermined antenna pattern of a conductive material formed thereon (i.e. a patch antenna).

Regarding claim 14, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 10, wherein the second antenna [205] is a wire antenna (See col. 3, lines 20-27).

Regarding claim 16, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 10, wherein the first antenna [204] is installed in an upper end of the mobile communication terminal and is selected from a group comprised of a wire antenna (See col. 3, lines 20-27).

Regarding claim 17, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 10, wherein the first antenna [204] is configured to serve a diversity receiving function in association with the second antenna [205], whereas the second antenna [205] is configured to serve the transmitting/receiving function (See FIG. 4).

Regarding claim 18, Narayanaswamy et al. teaches in figures 2-6 the antenna apparatus according to claim 10, wherein the second antenna [205] is configured to serve a diversity receiving function in association with the first antenna [204], whereas the first antenna is configured to serve the transmitting/receiving function (See FIG. 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narayanaswamy et al. (Cited above) in view of Egashira et al. (U.S. Patent No. 5,691,730).

Narayanaswamy et al. teaches every features of the claimed invention in paragraph 2, except for a helical antenna and a rod antenna retractable into and extendable from the mobile communication terminal.

Egashira et al. teaches in figure 1 a helical antenna [130] and a rod antenna [110, 120] retractable into and extendable from the mobile communication terminal [200].

In view of the above statement, It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the external antenna as shown in Narayanaswamy et al. by using the helical antenna and a rod antenna retractable into and extendable from the mobile communication terminal as taught by Egashira et al. in order to retractable broad-band antenna (See Abstract).

Allowable Subject Matter

5. Claims 19-21 are allowed.
6. Claims 4-7 and 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 4-5 and 12 is the inclusion of the limitation of at least one antenna sheet positioned between the flexible printed circuit board and the main board. It is this limitation found in each of the claims, as it is claimed

in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 6-7 and 13 is the inclusion of the limitation of at least one antenna sheet positioned between the flexible printed circuit board and the keypad assembly. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 19-21 is the inclusion of the limitation of at least one antenna means positioned either between the flexible printed circuit board and the main board or between the flexible printed circuit board and the keypad assembly. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-1819. The examiner can normally be reached on Monday-Friday from 7 AM to 4:30 PM, First Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shih-Chao Chen
Shih-Chao Chen
Primary Examiner
Art Unit 2821

SXC
February 7, 2005